



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,848	12/26/2001	Eric Sion	BDL-374XX	9636

207 7590 07/14/2004

WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP  
TEN POST OFFICE SQUARE  
BOSTON, MA 02109

EXAMINER
----------

CHEN, BRET P

ART UNIT	PAPER NUMBER
----------	--------------

1762

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/034,848

Applicant(s)

SION ET AL.

Examiner

B. Chen

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.  
4a) Of the above claim(s) 14-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### **DETAILED ACTION**

Claims 1-24 are pending in this application. Claims 14-24 have been withdrawn from consideration as being directed to a nonelected invention.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leluan et al. (6,001,419) or Robin-Brosse et al. (6,410,088) in view of either Christin et al. (5,904,957) or Vaudel (5,362,228).** Leluan discloses a method for chemical vapor infiltration of a material into a porous substrate (col.1 lines 8-9). Densification by chemical vapor infiltration results by placing the substrate in a reaction chamber of an infiltration oven (col.6 lines 32-42). The substrate is placed in an enclosure, wherein a gas diffuses within the accessible internal pores of the substrate, which gas contains at least a precursor of the material in the gaseous state (col.1 lines 28-46).

Robin-Brosse discloses a CVI method of densifying porous substrates (col.1 lines 4-7) in which a heated gas is utilized (col.3 lines 5-27). However, the references remain silent on the use of the substrate for a matrix.

It is noted that the substrate can be utilized as a matrix as noted in Leluan in col.1 lines 10-15 and in Robin-Brosse in col.2 lines 55-60. One skilled in the art would realize that the

Art Unit: 1762

substrate can be utilized as a matrix as taught by the prior art references and hence, would have been obvious to one skilled in the art because of its conventionality as noted above.

In addition, the references remain silent on preheating gases.

Christin discloses a chemical vapor infiltration method for densifying porous substrates (12) disposed in annular stacks which are loaded inside a reaction chamber (11) of an infiltration oven (col.1 lines 6-14) in which the gas admitted is preheated (col.1 lines 52-65) for the expressed purpose in ensuring a constant microstructure.

Vaudel discloses an installation for densifying porous substrates by chemical vapor infiltration comprising an enclosure, heating means for maintaining the temperature inside the enclosure at a desired value, support means for supporting said substrates inside the enclosure, and means for feeding said enclosure with reactive gas at an upper zone thereof, with the improvement of preheating the gas fed into said enclosure (col.1 lines 13-32 and col.2 lines 40-50). The preheating allows for improved composition and crystal structure (col.1 lines 40-65).

It would have been obvious to one skilled in the art to utilizing a gas preheating step as taught by Christin and Vaudel in the process of Leluann or Robin-Brosse with the expectation of obtaining improved microstructure and composition.

In claims 2-7, the applicant requires a specific temperature and pressure. It is believed that these are taught in the cited references. Regardless, it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as temperature and pressure through routine experimentation in the absence of a showing of criticality.

The limitations of claims 8-13 have been addressed above.

**Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christin et al. (5,904,957) or Vaudel (5,362,228).** Christin discloses a chemical vapor infiltration method for densifying porous substrates (12) disposed in annular stacks which are loaded inside a reaction chamber (11) of an infiltration oven (col.1 lines 6-14) in which the gas admitted is preheated (col.1 lines 52-65) for the expressed purpose in ensuring a constant microstructure. In one embodiment, the preheated gas coming from the diffuser plate 52 is channeled towards a volume 66 situated inside the chamber 41 (col.8 lines 53-55). A refractory matrix is disclosed (col.1 lines 19-27)

Vaudel discloses an installation for densifying porous substrates by chemical vapor infiltration comprising an enclosure, heating means for maintaining the temperature inside the enclosure at a desired value, support means for supporting said substrates inside the enclosure, and means for feeding said enclosure with reactive gas at an upper zone thereof, with the improvement of preheating the gas fed into said enclosure (col.1 lines 13-32 and col.2 lines 40-50). The preheating allows for improved composition and crystal structure (col.1 lines 40-65). In one embodiment, the preheated gas penetrates into an enclosure of an installation for chemical vapor infiltration (col.2 lines 29-32) and a matrix material is utilized (col.1 lines 30-48).

However, the references fail to teach a specific loading zone separate from a heating zone.

It is noted that the references clearly teach loading and heating the substrates. To have separate areas would allow better control over the deposition parameters but at an added expense. One skilled in the art would contemplate the advantages and disadvantages associated with separate zones. It would have been obvious to incorporate separate zones with the expectation of obtaining the known benefits including better precision of the deposition process.

Art Unit: 1762

The limitations of claims 2-13 have been addressed above.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 17 of U.S. Patent No. 6,572,371.**

Although the conflicting claims are not identical, they are not patentably distinct from each other because the elimination of a plurality of stacks is an obvious variation.

**Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,001,419 in view of Vaudel (5,362,228).** Although the conflicting claims are not identical, they are not patentably distinct from each other because preheating gases in a CVI process is an obvious variation as noted in Vaudel.

**Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 5,789,026 in**

Art Unit: 1762

**view of Vaudel (5,362,228).** Although the conflicting claims are not identical, they are not patentably distinct from each other because preheating gases in a CVI process is an obvious variation as noted in Vaudel. In addition, the elimination of recited materials is obvious.

**Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-6 of U.S. Patent No. 5,738,908.**

Although the conflicting claims are not identical, they are not patentably distinct from each other because the elimination of temperatures and pressures is an obvious variation.

**Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 5,652,030 in view of Vaudel (5,362,228).** Although the conflicting claims are not identical, they are not patentably distinct from each other because preheating gases in a CVI process is an obvious variation as noted in Vaudel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bc  
7/5/04

  
BRET CHEN  
PRIMARY EXAMINER